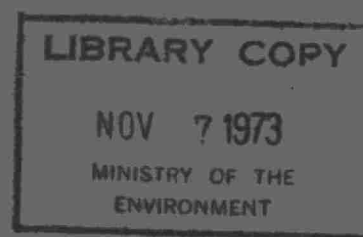


OPERATING SUMMARY

SOUTHAMPTON



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Ontario

Ministry of the
Environment

135 St. Clair Avenue West
Toronto 195, Ontario

We are pleased to present you with the 1972 operating summary for the water supply system serving your community.

This summary contains data on the quality and quantity of water produced as well as relevant financial information. Of particular interest is the review of the year's activities in which significant items of these data are discussed in some detail by the operations engineer and his staff who, through their day-to-day involvement with the operation, are thoroughly familiar with the plant.

We appreciate your continuing interest in the operation of this water supply.

D. S. Caverly,
Assistant Deputy Minister.

D. A. McTavish, P. Eng.,
Director,
Project Operations Branch.

MINISTRY OF THE ENVIRONMENT

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DEPUTY MINISTER
E. Biggs

ASSISTANT DEPUTY MINISTER
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EXECUTIVE DIRECTOR
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PROJECT OPERATIONS BRANCH

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ASSISTANT DIRECTOR
C. W. Perry

REGIONAL SUPERVISOR
P. J. Osmond

OPERATIONS ENGINEER
A. Clark

135 St. Clair Avenue West
Toronto 195

**SOUTHAMPTON
WATER TREATMENT PLANT**

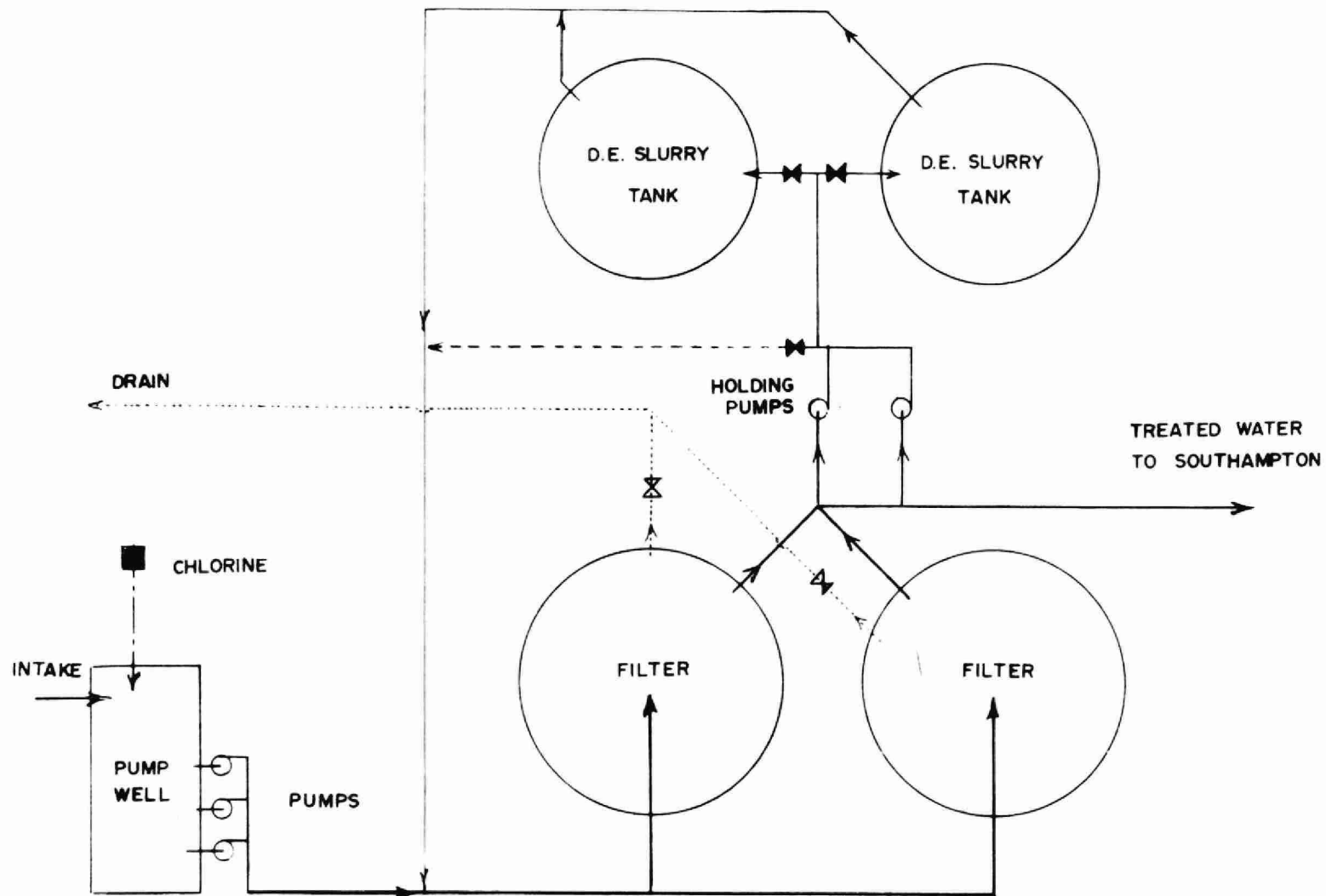
operated for
THE TOWN OF SOUTHAMPTON
by the
MINISTRY OF THE ENVIRONMENT

1972 ANNUAL OPERATING SUMMARY

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SOUTHAMPTON WATER TREATMENT PLANT



DESIGN DATA

PROJECT NO.

6-0124-63

NOMINAL CAPACITY

1.00 mgd

RAW WATER SOURCE

Lake Huron

INTAKE

Depth at crib: 15 ft

Pipe Size: 1100 ft of 24 in dia

CAPACITIES OF UNITS

Pumps: #1 700 igpm or 1.00 mgd

#2 700 igpm or 1.00 mgd

Standby 2100 igpm or 3.0 mgd

Filters: 2 x 350 = 700 igpm or 1.00 mgd

FILTRATION

Type: Bowser, pressure diatomaceous
earth filter

Size: Two filters rated at 350 gpm each
(1.75 gpm/ft²)

Surface: 400 ft² (total)

CHLORINATION

One Fischer & Porter gas chlorinator,
50 lb/day

STORAGE

Elevated Tank 100,000 gal (owned by
Town); useable volume 30,000 gal

'72 Review

GENERAL

The Southampton water project consists of a water filtration plant with an operating capacity of 0.80 mgd. Raw water is drawn from Lake Huron, pumped through diatomaceous earth pressure filters, chlorinated and delivered to the Town distribution system.

The treatment plant is located on the Lake Huron shore in a residential area near the southern limits of Southampton. The project is operated for the Ministry of the Environment by the Southampton Public Utilities Commission.

During 1972 the diatomaceous earth slurry feeding system was replaced, thus simplifying the operation and allowing manual adjustment of the feed rate.

OPERATING COSTS

Operating costs for 1972 totalled \$15,516.43 compared with \$20,337.54 for the previous year. The reduced costs during 1972 resulted from below normal repair and chemical costs.

PLANT FLOWS AND CHLORINATION

The total flow during 1972 was 148.2 million gallons, approximately 14 percent greater than the previous year. Although the average daily flow for the year was only 410,000 gallons per day, the average during the summer was 720,000 gallons per day.

Fortunately the raw water remained extremely low in turbidity throughout the summer months and the filters could be bypassed during this period. If the raw water quality had deteriorated, necessitating filtration, severe restrictions on water use would have been necessary.

A total of 1521 pounds of chlorine was used in 1972. Application at an average dosage of 1.0 mg/l produced a residual of 0.5 mg/l.

PROCESS CHEMICALS AND WATER QUALITY

A total of 14,100 pounds of diatomaceous earth was used during the year. This figure is similar to 1971 indicating another year of generally very good quality raw water.

CONCLUSIONS

The total flow increased 14 percent from 1971 and averaged 90 percent of the design capacity during the heavy water consumption period of July and August. Unusually good quality raw water was experienced throughout the summer months. Severe water shortages would have been experienced frequently had filtering been necessary during this period.

Steps should be taken to expand the plant filtration capacity as quickly as possible.

We recommend that steps also be taken to provide greater storage capacity for treated water.

PROJECT COSTS

NET CAPITAL COST \$426,300.68

DEDUCT - Portion financed by

Long Term Debt to MOE \$426,300.68

Debt Retirement Balance at Credit
(Sinking Fund) December 31, 1972 \$ 68,326.94

Net Operating \$ 15,516.48
Debt Retirement 5,406.00
Reserve 1,753.71
Interest Charged 23,906.50

TOTAL \$ 46,582.69

RESERVE ACCOUNT

Balance @ January 1, 1972 \$ 10,971.56

Deposited by Municipality 1,753.71

Interest Earned 632.05

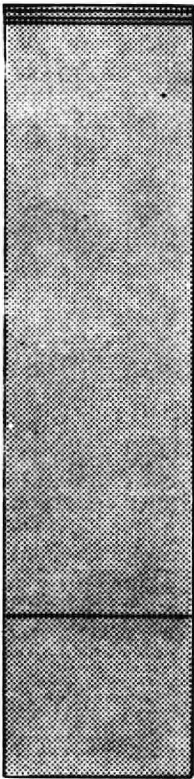
\$ 13,357.32

Less Expenditures 6,909.54

Balance @ December 31, 1972 \$ 6,447.78

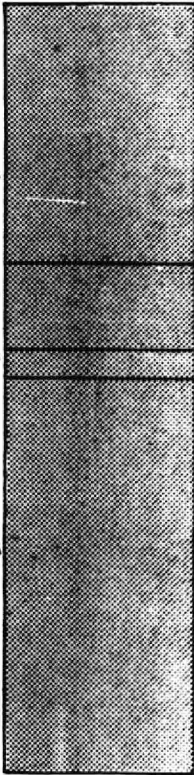
OPERATING COSTS

1972 COSTS



PAYROLL	%
FUEL	%
POWER	%
● CHEMICALS	<1 %
● GENERAL SUPPLIES	1 %
● EQUIPMENT	<1 %
● REPAIRS & MAINTENANCE	75 %
● SUNDRY	23 %
WATER	%
TRAVEL	%

TOTAL ANNUAL COST



NET OPERATING	33 %
DEBT RETIREMENT	12 %
RESERVE	4 %
INTEREST	51 %

YEARLY OPERATING COSTS

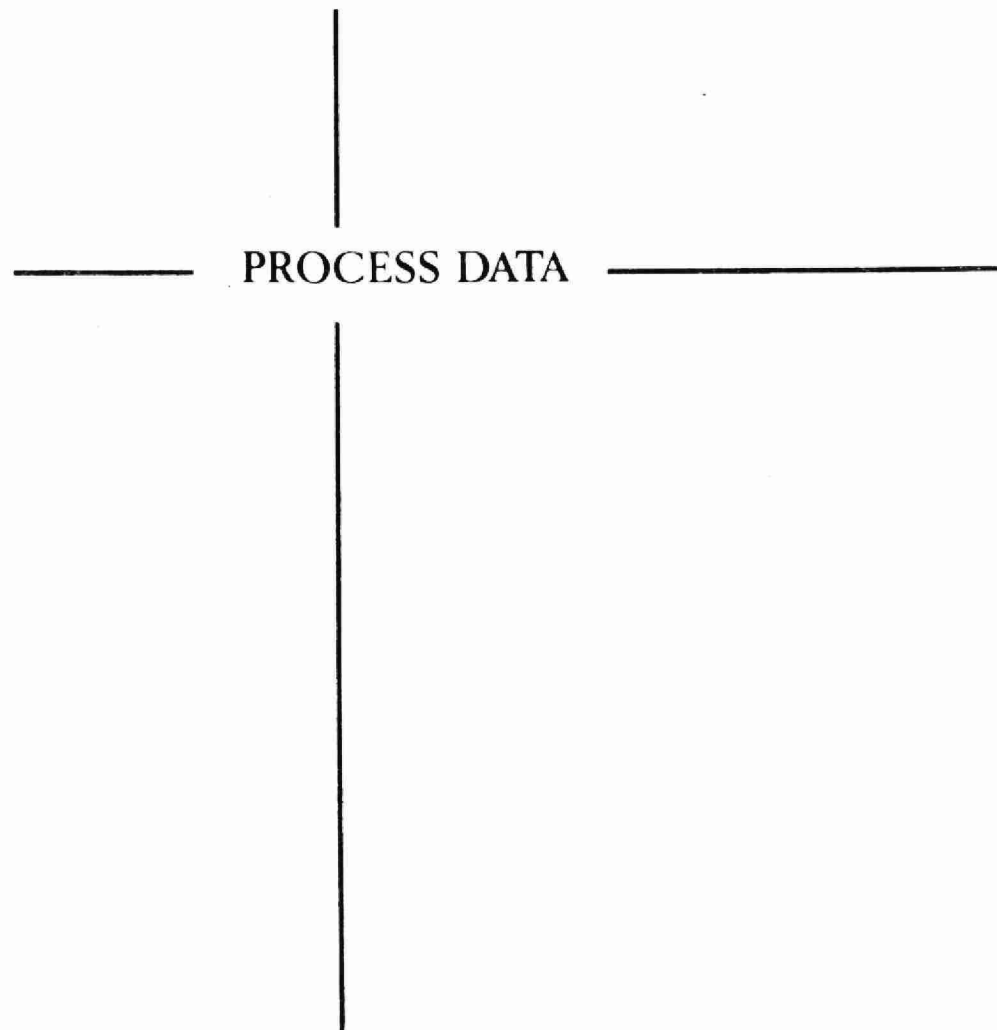
YEAR	WATER TREATED in million gallons	TOTAL OPERATING COSTS	TREATMENT COSTS
			in cents per 1000 gallons
1968	100.89	16,778.68	17 cents
1969	101.72	15,805.05	16 cents
1970	122.74	17,907.16	15 cents
1971	131.	20,337.54	16 cents
1972	150.0 *	15,516.48	10 cents

* Estimated

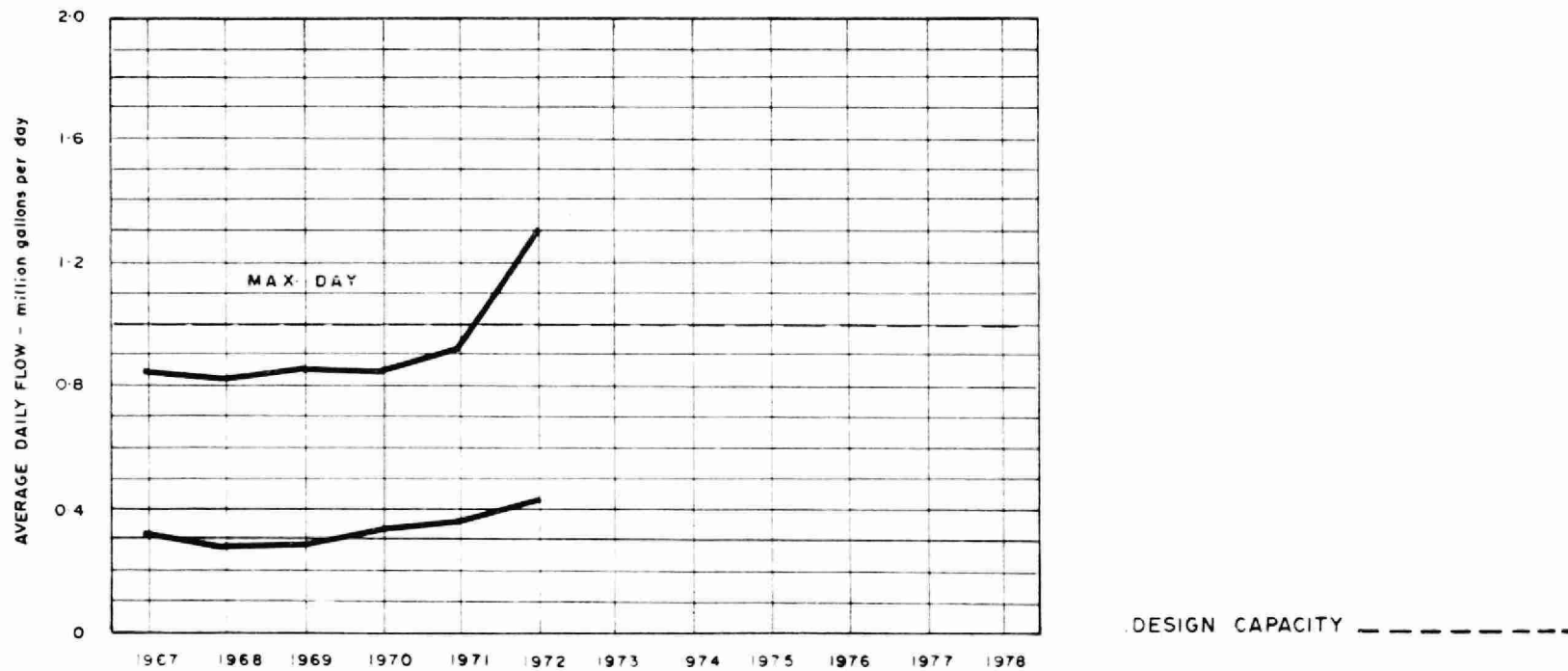
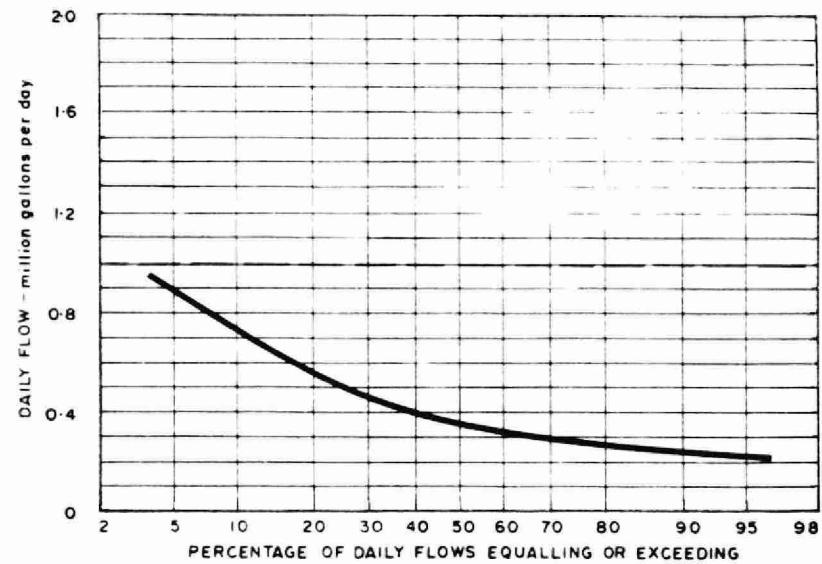
MONTHLY OPERATING COSTS

MONTH	TOTAL EXPENDITURE	REGULAR PAYROLL	CASUAL PAYROLL	FUEL	POWER	CHEMICALS	GENERAL SUPPLIES	EQUIPMENT	REPAIRS and MAINTENANCE	SUNDRY	TRAVEL
JAN	18.33							(20.78)	39.11		
FEB	435.20								435.20		
MAR	1564.44						30.00		1501.99	32.45	
APR	1342.77						46.04		1294.67	2.06	
MAY	3263.67						17.85		3238.27	7.55	
JUNE	291.70							31.90	259.80		
JULY	935.58						2.87	78.12	854.59		
AUG	(2.06)									(2.06)	
SEPT	283.98					105.00	(6.35)		185.33		
OCT	30.04								30.04		
NOV	3687.96								3412.29	275.67	
DEC	3664.87						43.71		427.96	3193.20	
TOTAL	15516.48					105.00	134.12	89.24	11679.25	3508.87	

Brackets indicate credit.



FLOWS



PLANT PERFORMANCE

MONTH	FLOWS				RAW WATER		TREATED WATER		FILTER OPERATION		
	TOTAL PLANT OUTPUT million gallons	AVERAGE DAILY FLOW million gallons	MAXIMUM DAY'S FLOW million gallons	MAXIMUM RATE mgd	TURBIDITY (AVERAGE) JTU	COLOUR (AVERAGE) App. units	TURBIDITY (AVERAGE) JTU	COLOUR (AVERAGE) App. units	NUMBER OF DAYS USED	DIATOMACEOUS EARTH	
										AMOUNT USED 10 ³ lb.	DOSE mg/l
JAN	9.9 est.	.32	.34		11	< 5	8	< 5			
FEB	9.2	.32	.34		11	10	20	5	15	3.9	42.
MAR	9.5	.31	.34		4	< 5	3	< 5	3		
APR	7.9	.26	.33		4	5	2	< 5	17	5.0	63.
MAY	11.7	.38	.70		5	10	1	5	11	2.1	18.
JUNE	14.4	.48	.71		3						
JULY	23.5 est.	.76	1.30		3	< 5	4	< 5			
AUG	21.0	.68	1.18		2						
SEPT	12.9	.43	.78		3	< 5	3	< 5			
OCT	9.1	.29	.56		4	18	6	8			
NOV	9.1	.30	.41		4						
DEC	10.2	.33	.56						14	3.1	30.
TOTAL	148.2						AVERAGE 6	AVERAGE 6	60	14.1	38.
AVG.		.41	MAXIMUM 1.30	MAXIMUM	5	9	MAXIMUM 20	MAXIMUM 10		3.5	

CHLORINATION and DISINFECTION

MONTH	RAW WATER					PLANT EFFLUENT		DISTRIBUTION SYSTEM		CHLORINATION			
	NUMBER OF SAMPLES HAVING TOTAL COLIFORM ORGANISMS PER 100 ml OF					NUMBER OF SAMPLES TAKEN	NUMBER HAVING COLIFORM ORGANISMS	NUMBER OF SAMPLES TAKEN	NUMBER HAVING COLIFORM ORGANISMS	TOTAL AMOUNT OF CHLORINE USED pounds	DOSAGE		RESIDUAL IN PLANT EFFLUENT mg/l
	0	1 - 3	4 - 32	33-320	> 320						PRE - mg/l	POST - mg/l	
JAN	1	0	0	0	0	0	0	7	0	120	1.2		.5
FEB	2	0	0	0	0	0	0	4	0	147	1.6		.5
MAR	5	0	0	0	0	0	0	10	0	174	1.8		.5
APR	3	1	1	0	0	0	0	8	0	136	1.7		.5
MAY	3	0	0	0	0	0	0	6	0	117	1.0		.5
JUNE	2	0	0	0	0	0	0	4	0	119	.9		.5
JULY	2	0	0	0	0	0	0	3	0	163	.9		.5
AUG	2	1	1	0	0	0	0	9	1	140	.7		.5
SEPT	1	0	1	0	0	0	0	6	1	111	.9		.5
OCT	0	0	0	2	0	1	0	10	2	90	1.0		.5
NOV	0	2	0	0	0	0	0	8	0	101	1.0		.5
DEC	0	0	1	0	0	0	0	5	0	103	1.0		.5
TOTAL	21	4	4	2	0	1	0	80	4	1521			
AVG.	2.4 (NOTE - Average shown is the GEOMETRIC MEAN)									4 pounds per day	1.0		.5

WATER QUALITY

PROPERTY	RAW WATER				TREATED WATER				DESIRABLE STANDARDS
	NUMBER OF SAMPLES	AVERAGE	MAXIMUM	MINIMUM	NUMBER OF SAMPLES	AVERAGE	MAXIMUM	MINIMUM	
HARDNESS in mg/l as CaCO_3	10	110	144	88	10	110	144	90	80 - 100
ALKALINITY in mg/l as CaCO_3	10	93	127	79	10	90	113	81	30 - 100
IRON in mg/l Fe	10	.6	2.0	.2	10	.21	.90	.05	Less than 0.3
CHLORIDE in mg/l Cl^-	10	8	12	6	10	8	10	5	Less than 250
pH in pH units	10	8.0	8.2	7.6	10	8.0	8.3	7.8	7.0 - 8.5
FLUORIDE in mg/l F^-	2	.2	.2	.1	2	.1	.1	.1	Less than 1.2

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